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EXAMINER

KOVALICK, VINCENT E

ART UNIT

PAPER NUMBER

2673

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,413	YONEDA ET AL.	
	Examiner	Art Unit	
	Vincent E Kovalick	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

TAILED ACTION

Response to Amendment

1. This Office Action is in response to Applicant's Amendment dated September 24, 2004, in response to USPTO Office Action dated June 23, 2004.

The amendment to claims 1 is herewith noted and entered in the record.

Applicant's remarks/argument relative to claims 1-4 and 6-9 that center on the teaching wherein "Hebiguchi does not teach driving the fields in an order that is discontinued at least once", is rendered moot in that this feature is taught by Kanno et al. (USP 5,172,107) which is used in the rejection of said claims 1-4 and 6-9.

Applicant's remarks/argument regarding claim 10, wherein "Kondoh does not disclose that starting to scan one field is based upon the end of the reset period of the previous field" is rendered moot with the introduction of prior art (USP 6,628,251, Ishizuka) that teaches said feature (col. 5, lines 42-55 and Fig. 4).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. (USP 6,184,853) taken with Kanno et al. (USP 5,172,107).

Art Unit: 2673

Relative to claim 1, Hebiguchi et al. **teaches** a method of driving a display device (col. 1, lines 15-67; col. 2, lines 1-67 and col. 3, lines 1-15); Hebiguchi et al. further **teaches** a liquid crystal display (LCD) apparatus comprising: a liquid crystal display element comprised of a liquid crystal layer and having a plurality of pixels arranged in a matrix form (col. 4, lines 30-63); and a driver for dividing one frame into at least four fields and interlace-scanning the at least four fields (col. 12, lines 1-12 and col. 13, lines 6-10).

Hebiguchi et al. **does not teach** wherein said driver drives the respective fields composing one frame so that a scanning order of the fields is non-sequential at least once.

Hebiguchi et al. teaches addresses the method and means for driving a matrix driving display device that displays one color by combining a plurality of basic colors.

Kanno et al. **teaches** a LCD for scanning multiple fields in a frame in a non-sequential manner (col. 3, lines 23-68 and col. 4, lines 1-12). Kanno et al. further **teaches** said driver drives the respective fields composing one frame so that a scanning order of the fields is non-sequential at least once (col. 7, lines 34-41; col. 8, lines 3-23 and Figs. 3C and 4C).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. the feature as taught by Kanno et al. in order to provide a sub-picture without line flicker through one-field skipping.

As to claim 6, Hebiguchi et al. **teaches** said LCD wherein the display element is constituted so that a plurality of liquid crystal layers are laminated, and the liquid crystal layers are scanned by said driver (col. 4, lines 30-63 and Fig. 1).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al.

Art Unit: 2673

taken with Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Ozawa et al. (USP 6,501,454).

Relative to claim 2, Hebiguchi et al. taken with Kanno et al. **does not teach** a LCD wherein said drive drives scanning lines by means of a driving waveform having a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals, and a maintaining period for establishing the state selected at the selection period.

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Ozawa et al. **teaches** a LCD driving method for driving an apparatus using the LCD (col. 2, lines 32-65; col. 3, lines 1-65 and col. 4, lines 1-57); Ozawa et al. further **teaches** a LCD wherein said drive drives scanning lines by means of a driving waveform having a reset period for resetting a state of liquid crystals, a selection period (T3) for selecting a final display state of the liquid crystals, and a maintaining period (T4) for establishing the state selected at the selection period (col. 8, lines 37-67 and Fig. 4).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Ozawa et al. in order to provide a driving method in which various types of display patterns can be displayed with a predetermined driving voltage margin being maintained and power consumption being prevented from increasing, (Ozawa et al. col. 2, lines 32-38).

Art Unit: 2673

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Tsuji et al. (USP 5,111,297).

Regarding claim 3, Hebiguchi et al. taken with Kanno et al. **does not teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always discontinued.

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Tsuji et al. **teaches** a television receiver that performs scanning conversion(col. 2, lines 48-68 and col. 3, lines 1-62); Tsuji et al. further **teaches teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always discontinued (col. 4, lines 59-68 and Fig. 4). It being understood that with switch 11, in Fig. 4 remaining closed, the circuit will remain in a discontinuous scanning order.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Tsuji et al. in order to provide a sub-picture without line flicker through field skipping.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Shiba et al. (USP 5,526,014).

Regarding claim 4, Hebiguchi et al. taken with Kanno et al. **does not specifically teach** said LCD

apparatus wherein said driver successively scans odd-numbered lines of the respective fields and

Art Unit: 2673

successively scans even-numbered lines; though Hebiguchi et al. does teach the use of interlace-scanning (col. 13, lines 6-10).

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Shiba et al. **teaches** a semiconductor device for driving a LCD panel (col. 4, lines 36-67 and col. 5, lines 1-3); Shiba et al. further **teaches** said LCD apparatus wherein said driver successively scans odd-numbered lines of the respective fields and successively scans even-numbered lines (col. 2, lines 36-45).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Shiba et al. in order to provide the benefit of doubling the vertical resolution of the image in turn yielding a smoother displayed image.

7. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Nagai et al. (USP 5,091,557).

Relative to claim 7, Hebiguchi et al. taken with Kanno et al. **does not teach** said LCD apparatus wherein the liquid crystals included in said LCD element have memory property.

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Art Unit: 2673

Nagai et al. **teaches** liquid crystal properties (col. 2, lines 50-67 and col. 3, lines 1-17); Nagai et al. further **teaches** said LCD apparatus wherein the liquid crystals included in said LCD element have memory property (col. 9, lines 23-27).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Nagai et al. in order to provide a LCD element with desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desired state.

Regarding claim 8, Nagai et al. further **teaches** said LCD apparatus wherein said liquid crystals show a cholesteric phase at room temperature (col. 15, lines 51-54).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Sandoe et al. (USP 6,243,061).

Relative to claim 9, Hebiguchi et al. taken with Kanno et al. **does not teach** said LCD apparatus wherein the scanning of next field is started based on reset period end timing of one scanning line of the previous field.

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Sandoe et al. **teaches** an active matrix display device and methods of driving such (col. 3, lines 19-67 and col. 4, lines 1-56); Sandoe et al. further **teaches** said LCD apparatus wherein the

Art Unit: 2673

scanning of next field is started based on reset period end timing of one scanning line of the previous field (col. 8, lines 5-11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Sandoe et al. in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to begin the next selection period.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with I Kanno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Ishizuka (USP 6,628,251)

Regarding claim 10, Hebiguchi et al. taken with Kanno et al. **does not teach** said LCD apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field.

Hebiguchi et al. taken with Kanno et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Ishizuka **teaches** a method capable of establishing a high contrast display (col. 2, lines 36-67 and col. 3, lines 1-33); Ishizuka further **teaches** a display apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field

Art Unit: 2673

scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field (col. 5, lines 42-55). It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Kanno et al. the feature as taught by Ishizuka in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to initiate the data signal selection process and then to maintain the signal until the next reset signal starting of the scanning of the next field.

10. Regarding claims 11, 12 and 13, the remarks presented above in items 3 and 7 with regard to claims 6, 7 and 8, apply equally to claims 11, 12 and 13 respectively.

Allowable Subject Matter

11. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, the major difference between the teachings of the prior art of record (USP 6,184,853, Hebiguchi et al.; USP 5,172,107, Kanno et al. and USP 6,501,454, Ozawea et al.) is that said prior art of record **does not teach** the LCD apparatus wherein the driver scans the scanning lines according to the equation $S = a + nk$, where "S" is the scanning lines to be driven; "a" is a variable number with an initial value of "one"; "n" is a variable number with an initial value of "zero", and "k" is in integer of not less than 2.

Art Unit: 2673

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	6,414,666	Yamakawa et al.
U. S. Patent No.	5,754,153	Mizutome et al.
U. S. Patent No.	5,734,367	Tsuboyama et al.
U. S. Patent No.	5,726,679	Kanno et al.

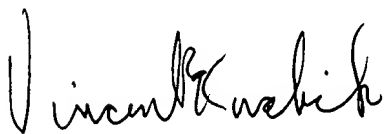
Art Unit: 2673

Responses

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E Kovalick whose telephone number is 703 306-3020. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Vincent E. Kovalick
January 14, 2005



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